cultures were maintained at 25 ± 2°C. For chromosome studies the root tips of the parents and those of the hybrid plants were fixed in acetic alcohol (1:3) and stained with acetocarmine.

There was a considerable difference in the growth response and germination of the parents and the hybrid ovules (table 1). The younger ovules had a tendency to proliferate to form callus, the older ovules germinated. The parental ovules started to grow within 2 days of culture, and produced plants in 10 days. The hybrid ovules on the contrary took considerable time (25–30 days) to germinate (figure A). Whereas the germination of parental ovules, *B. juncea* and *B. hirta* was 60% and 44% respectively, the hybrid ovules showed a poor germination of only 2%. The root tip squashes from the hybrid plantlets, showed $2n = 30$ (figure B), an intermediate chromosome number between their parents.

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BEHAVIOUR OF MEIOTIC CHROMOSOMES IN INDUCED AUTOTETRAPLOIDS OF *SALVIA COCCINEA* JUSS.

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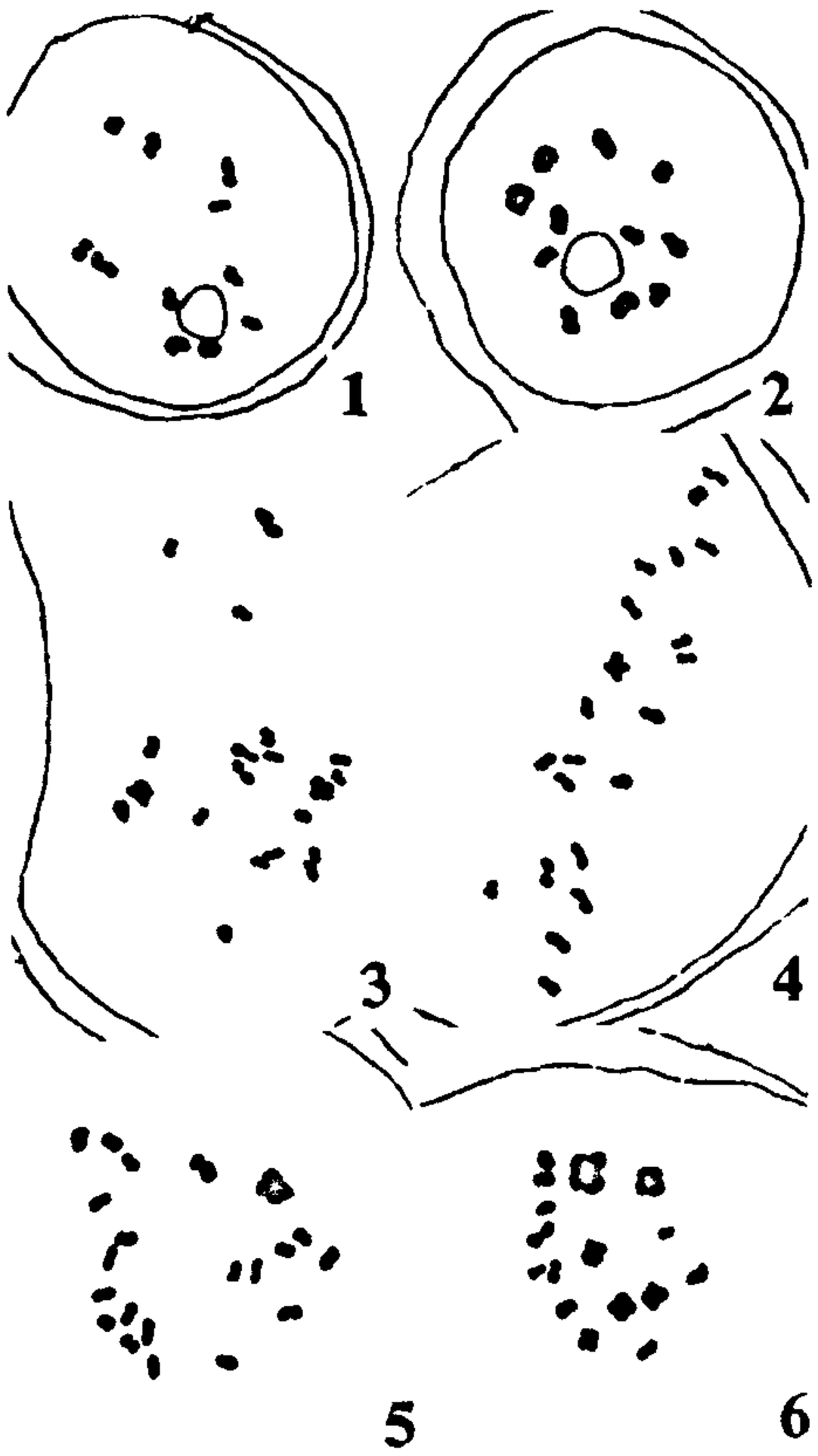
SALVIA COCCINEA is an ornamental herb. Several varieties of this species are cultivated for their beautiful red, pink and white flowers. All these varieties contain $2n = 22$ very small chromosomes[1]. Meiotic studies showed normal chromosome behaviour with regular formation of 11 bivalents as well as equal anaphase separation[2]. It is the ornamentals among which induced autopolyploids have been produced commercially in many species[3]. As the flower size of *S. coccinea* was too small, attempts were made to induce colchiploidy with a view to increase the flower size. Seedlings of two varieties of *S. coccinea i.e.* Red Indian (red flower) and Pink Pearl (pink flower) were treated with 0.25% colchicine solution which produced a few tetraploids in both the varieties. The present communication reports the behaviour of their meiotic chromosomes.

Flower buds were directly smeared in 2% aceto-carmine solution and chromosomes were observed under a Carl—Zeiss microscope. It was noticed that



Figures 1–6. 1, 2 Diploid chromosomes of vars. Red Indian and Pink Pearl ($n = 11$), **3, 4** of induced autotetraploid var. Red Indian (2 IV + 18 II, 1 IV + 20 II), **5, 6** of induced autotetraploid var. Pink Pearl (1 IV + 20 II, 6 IV + 10 II).

the number of chromosomes in the pollen mother cells became doubled. Most of the PMCs showed the formation of 22 bivalents and there were very few quadrivalent formation (figures 1–6). Occasionally trivalents were also noticed. The range of quadrivalent formation was 0–10 (table 1). The anaphase separation of chromosomes was more or less regular with rare occurrence of lagging chromosomes. Microsporogenesis was also normal except occasional formation of diads, triads and pentads. Pollen sterility was low with only 13–16% sterile pollen grains as compared to 5% in the diploids. Pollen size was also bigger in the autotetraploids than in the diploids.

Table 1 *Metaphase I configuration in induced autotetraploids of Salvia coccinea*

Variety-Pink Pearl and Red Indian,
Total number of metaphase observed 38 and 53.

Nature of configuration	Frequency (No. of PMC)
22 II	15
1 IV + 20 II	4
2 IV + 18 II	3
3 IV + 16 II	2
4 IV + 14 II	6
5 IV + 12 II	2
6 IV + 10 II	4
8 IV + 6 II	2
22 II	17
1 IV + 20 II	7
2 IV + 18 II	6
3 IV + 16 II	3
4 IV + 14 II	4
5 IV + 12 II	4
6 IV + 10 II	6
7 IV + 8 II	1
8 IV + 6 II	2
9 IV + 4 II	2
10 IV + 2 II	1

Formation of tetravalents is one indication of autotetraploidy, but in the present investigation tetravalent formation was low. This may be due to several factors. Stebbins[4] stated that in the first place, even when 4 chromosomes are completely homologous with each other, they do not always form quadrivalents at first metaphase. Since at pachytene, chromosome segments associated with another homologue over only a part of its length. If chiasmata fail to form in these paired regions the chromosomes will not remain paired at metaphase. Since chiasma frequency depends on chromosome length, polyploids in plants having small chromosomes are much less likely to form multivalents than those with large chromosomes. Furthermore, since chiasma frequency is, in part, genotypically controlled, diploids which contain genes for lower chiasma frequency are likely to produce polyploids forming a few or no multivalents. Studies by the author[5] on the chiasma frequency of the diploids of *S. coccinea* may be attributed to their minute chromosome size. It is also likely that some genes may be responsible for low chiasma frequency that facilitates more bivalent formation. The low percentage of pollen sterility may also be explained on the basis of low chromosomal abnormalities in the autotetraploids.

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A HOODED MUTANT IN BARLEY

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IN the F_2 generation of a cross BG108 × DL70, a hooded plant was identified. There was a small awn at the tip of each hood (figures A–D). As there was a single such plant in the large F_2 population of the above said cross, it was inferred that it is a spontaneous mutant and not a recombinant. When its progeny was grown, it bred true. This mutant (hooded) was crossed with BG108 and DL70 (normal). The heterozygous F_1's were normal. In the F_2 generation, the characters segregated in the ratio of 3 normal and 1 hooded (table 1). When the F_2 plants were selfed and their progenies were examined, as expected, all the F_2 hooded plants were homozygous, but only a third of the normal plants were homozygous, and gave rise exclusively to normal progeny. The